

**REMARKS**

The Office Action rejects claims 8 and 10 under 35 U.S.C § 103(a) as being unpatentable over Garner et al. (Published U.S. Patent Application No. 2004/0017986) in view of Blaszyk et al. (U.S. Patent No. 6,324,872). Additionally, the Office Action rejects claims 9 and 11 under 35 U.S.C § 103(a) as being unpatentable over Garner and Blaszyk in view of Moridaira et al. (Published U.S. Patent Application No. 2003/0086670). The Office Action also rejects claims 12 and 13 under 35 U.S.C § 103(a) as being unpatentable over Garner and Blaszyk in view of Evans et al. (U.S. Patent No. 5,822,487). Additionally, the Office Action rejects claim 14 under 35 U.S.C § 103(a) as being unpatentable over Garner, Blaszyk, and Evans in view of Cocchini et al. (Published International Patent Application No. WO 01/33184).

By this Reply, Applicants have amended independent claim 8 to recite “the spin function frequency  $\nu$ , the viscous zone length  $L$  and the drawing speed  $V$  being such that both a torsion and at least a 50% detorsion are applied to the viscous zone of each portion of the drawn glass material, and a recovery of at least 50% occurs in the optical fiber.” Applicants respectfully submit that the originally filed application and drawings fully support the amendments to the claims. No new matter has been added. Claims 8-14 are currently pending in the application.

Regarding the rejections of claims 8-14 under 35 U.S.C. § 103(a), Applicants respectfully submit the Office Action does not establish a *prima facie* case of obviousness. A proper obviousness rejection must address every claim feature. See

M.P.E.P. § 2143.03. In a method according to any of claims 8-14, “the spin function frequency  $\nu$ , the viscous zone length L and the drawing speed V [are] such that both a torsion and at least a 50% detorsion are applied to the viscous zone of each portion of the drawn glass material, and a recovery of at least 50% occurs in the optical fiber” (emphasis added). As previously discussed, Garner, Moridaira, Evans, and Cocchini fail, both alone and in combination, to teach or suggest at least these claimed features. See Applicants’ Reply filed September 21, 2009 at 8-12.

Additionally, Applicants respectfully submit that Blaszyk also fails to teach or suggest at least these claimed features. The Office Action purports that Blaszyk suggests applying 60% detorsion of each portion of the fiber by stating “[e]ssentially any amount of spin required for desirable optical properties and essentially any desired pattern of variation in the degree and direction of spin along the length of the fiber can be provided.” Contrary to the suggestion of the office action, this statement does not suggest to apply first a torsion and then at least a 50% detorsion to a same molten portion of the fiber while in the viscous zone. Rather, this portion of Blaszyk suggests no more than that the permanent spin in the resulting fiber may have whatever characteristics one may desire.

Blaszyk indicates at the beginning of the same paragraph (col. 5, ll. 20-24) and elsewhere (e.g., col. 2, ll. 52-63) that the “permanent spin” present in the final fiber represents the parameter it views as significant in providing “desirable optical properties.” To impart permanent spin, Blaszyk teaches to spin the fiber repeatedly in alternating, opposite directions, thereby alternating between applying torsion and detorsion (a detorsion being a torsion having a direction opposite the direction of

previous torsion) to the fiber. Col. 3, l. 66-col. 4, l. 3. In its discussion of this process, however, Blaszyk suggests only the conventional approach of applying either torsion or detorsion to a same molten portion of the fiber while in the viscous zone so that there is a substantially one-to-one correspondence between the twist applied to the fiber and the spin which is actually frozen (i.e., permanently impressed) into the fiber. See Col. 5, ll. 23-26 ("Each portion of the fiber acquires a spin corresponding to the direction of spinning motion during the time such portion of the fiber passed through the melt region and cooled."); col. 9, ll. 30-38.

As noted at p. 4, ll. 13-15 of the original application, "recovery" refers to "the ratio (Tappl-Tfr/Tappl, wherein Tappl is the maximum actually applied torsion and Tfr is the maximum frozen-in torsion." Thus, by suggesting to apply the spin so that there is a substantially one-to-one correspondence between the twist applied to the fiber and the spin that is actually frozen in (i.e., permanently impressed), Blaszyk suggests zero recovery in the fiber. In particular, Blaszyk suggests applying a spin to the optical fiber so that each portion of drawn glass material passing through the furnace experiences either a torsion in a direction or a torsion in an opposite direction (i.e., a detorsion).

In contrast to Blaszyk's disclosure, in a method according to any of claims 8-14, each portion of drawn glass material passing through the furnace experiences a spin in two opposite directions (a torsion and at least a 50% detorsion). In this way, the applied torsion is partially removed by the applied detorsion and a recovery of at least 50% occurs in the optical fiber between the applied spin and the frozen-in spin. Contrary to conventional thinking, Applicants have found that this approach provides a significant PMD reduction, notwithstanding the difference between the applied spin and

the frozen-in-spin. Though Applicants do not wish to be bound by this theory, Applicants believe that this PMD reduction may occur because the claimed approach provides viscous torsion that significantly affects the geometrical asymmetries of optical fiber, irrespective of the clockwise or counterclockwise direction of the applied spin.

Nowhere, does Blaszyk teach or suggest the possibility of achieving the desired amount of permanent spin in each portion of the fiber by first applying a torsion and then a detorsion to the same molten portion of the fiber so that the applied torsion is partially removed by the applied detorsion. Indeed, with no suggestion in Blaszyk that any benefit would accrue from applying first a torsion and then a detorsion to a same molten portion of the fiber, a person of ordinary skill in the art would have viewed this as an inefficient waste of motion.

In addition to the foregoing deficiencies of the rejections, Applicant respectfully submits that Garner teaches away from the claimed invention. A method according to any of claims 8-14 includes, *inter alia*, "applying to the optical fiber a substantially sinusoidal spin." Garner indicates that such an approach provides an unsuitable fiber, stating that "a substantially sinusoidal spin function does not optimize the reduction of PMD." To address these concerns about a "substantially sinusoidal spin function," Garner discloses only modulated sinusoidal functions as part of the invention disclosed therein. See ¶¶ 33-35 and 49-57; Figs. 5A, 5B, and 6. Consistent with this, Garner distinguishes between substantially sinusoidal and modulated sinusoidal spin functions by using the term "prior art" in connection with substantially sinusoidal spin functions and referring to modulated spin functions as belonging to "the present invention." See ¶¶ 30, 31, 33-35; and Figs. 3B, 3C, 5A, 5B, and 6.

Thus, Applicants respectfully submit that Garner would discourage a person of ordinary skill in the art from using a substantially sinusoidal spin function. If reading a reference would discourage a person of ordinary skill in the art from implementing the claimed invention, the reference teaches away from the claimed invention. Tec Air, Inc. v. Denso Mfg. Michigan Inc., 192 F.3d 1353, 1360 (Fed. Cir. 1999), citing In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994). A reference that teaches away from a claimed combination generally cannot support a *prima facie* case of obviousness of that claimed combination. McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1354 (Fed. Cir. 2001), citing In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994).

For at least the foregoing reasons, Applicants respectfully submit that the Office Action has not established a *prima facie* case of obviousness of claims 8-14. Accordingly, Applicants respectfully request withdrawal of the rejections of these claims under 35 U.S.C. § 103(a).

In view of the foregoing remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

The Office Action contains characterizations of the claims and the related art with which Applicant does not necessarily agree. Unless expressly noted otherwise, Applicant declines to subscribe to any statement or characterization in the Office Action.


Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

If the Examiner believes a telephone conversation might advance prosecution,  
the Examiner is invited to call Applicant's undersigned agent at 202-408-4492.

Respectfully submitted,

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By:   
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